Adoption Of E-Commerce In Small And Medium Sized Enterprises In Bogor District

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Abstract.

In recent years, e-commerce has emerged as one of the most rapidly expanding commercial trends. This trend is propelled by the growing prevalence of internet access and the widespread adoption of smartphones in society. Small and medium-sized enterprises (SMEs) play a significant role in the Indonesian economy. The transformation of SMEs must continue to be strengthened through optimizing the use of digital technology so that it can attract benefits for marketing activities and product sales. digital marketing is the most chosen area to start. The challenge is that as many as 30.9% of SMEs still experience difficulties in digital adoption. The objective of this study is to examine the determinants that impact the implementation of electronic commerce by small and medium-sized enterprises in Bogor Regency. This study used an online survey methodology, with a sample size of 170 small and medium-sized enterprises (SMEs) located in Bogor Regency. Data processing was conducted utilizing spreadsheet apps and SmartPLS. The findings indicated that perceived utility, external influences, and attitude towards adopting e-commerce are influential and statistically significant factors in promoting e-commerce adoption. Regarding the perceived ease of use, the attitude towards adopting e-commerce is not influenced by technical readiness and organizational readiness. This research has several implications for small and medium-sized enterprises (SMEs), government entities, and e-commerce administrators. This research demonstrates the imperative for SMEs to enhance their knowledge and skills in utilizing e-commerce, while also enhancing their organizational governance and receptiveness to change, particularly at the top management level. The government requires consistency in offering support to small and medium enterprises (SMEs) in their use of e-commerce, including training, financial aid, and innovation.

Keywords: *E-Commerce adoption, SMEs, SmartPLS, perceived utility,and attitude towards.*

I. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are a vital component of Indonesia's domestic economy, as demonstrated by their substantial numbers, high employment rates, and significant contributions to the country's GDP. The Indonesian government is actively promoting the growth and progress of Small and Medium Enterprises (SMEs) in the country. The Ministry of Cooperatives and Micro, Small and Medium Enterprises (MSMEs) has set an ambitious goal of having 24 million SMEs enter the digital ecosystem by the end of 2023. Given that SMEs contribute 61% to the GDP, employ 97% of the workforce, and account for 16.65% of non-oil and gas exports [1], it is imperative to assist them in building their capacity to conduct digital business. According to the 'MSME Study Report: The Role of Marketplaces for MSMEs' by Katadata Insights Center, 77% of business actors are confident that marketplaces are instrumental in marketing their products, allowing them to thrive and sell even during the COVID-19 pandemic [2].To maximize product sales, SMEs must optimize their use of digital technology, particularly in the wake of the COVID-19 pandemic. By embracing digital marketing, SMEs can reap the benefits of this powerful tool and achieve transformational growth. According to a survey conducted by the McKinsey Global Institute, SMEs that utilize the internet with high intensity experience twice the growth, export twice as much, create twice as many jobs, and increase productivity faster than their peers. [3] states that SMEs in Asia with a website are nearly four times more likely to export their products than those without. Meanwhile, McKinsey 2021 reports that only 0.1% of SMEs in Indonesia currently use digital platforms for transactions, significantly lower than the global standard of 1-2%.

However, McKinsey predicts that digital and technology adoption could add an additional US$ 140 billion to the output of MSMEs in Indonesia [4]. Prioritizing digital marketing is a crucial aspect of SMEs adopting digital technology. It is important to note that despite the challenges faced by up to 30.9% of SMEs in digital adoption, the benefits of digital technology adoption outweigh the risks [5]. As suggested by [6], utilizing online resources and e-commerce channels can provide a competitive advantage for small and

medium enterprises. By adopting digital technology, SMEs can enter new markets with fewer barriers. [7] found a positive correlation between digital marketing and the performance of small and medium-sized enterprises (SMEs). Digital media enables SMEs to access global markets without being limited by geographical or time constraints. This is due to the ease and convenience of optimizing communication, marketing, live chat, and online payments, resulting in significant time and cost savings.From the opensource data published by the West Java Provincial Government, by 2022 there will be 506,347 SMEs in Bogor Regency with an average annual growth rate of 13.25 percent. Based on the added value of e-commerce adoption that has been explained and to add academic references regarding e-commerce adoption by SMEs in Bogor Regency, this study will delve deeper into the factors that drive e-commerce adoption by SMEs in Bogor Regency.

II. METHODS

This study confidently defines SMEs based on the number of workers, utilizing the SME criteria released by the Central Statistics Agency (BPS). A micro-enterprise is classified as a business with up to 4 permanent workers, while a small business is defined as having between 5 and 19 employees, and a medium-sized business is characterized by having between 20 and 99 employees [8].This study employs adaptations of the Technology Acceptance Model (TAM) and the Technology, Organization and Environment (TOE) Model. The TAM model consists of three variables: attitude towards utilizing technology or systems (ATU), perceived usefulness (PU), and perceived ease of use (PEOU) [9]. The TAM model was utilized in research conducted by [6], [8], [10], [11], [12], [13], [14], [15], [16], [17] to investigate technology adoption. The Technology-Organization-Environment (TOE) framework is commonly employed in studies on the adoption of technology in organizational settings. This framework comprises three primary determinants that influence the adoption of technology within an organization: technology itself, the company's structure and processes, and the external environment. This model is capable of identifying multiple aspects that impact the adoption of technology within an organization [18]. The TOE Model is used [19], [20], [21], [22], [23], [24], [25].The conceptual model developed in this study is depicted in Fig.1, while the relationships between variables are presented in Table 1.

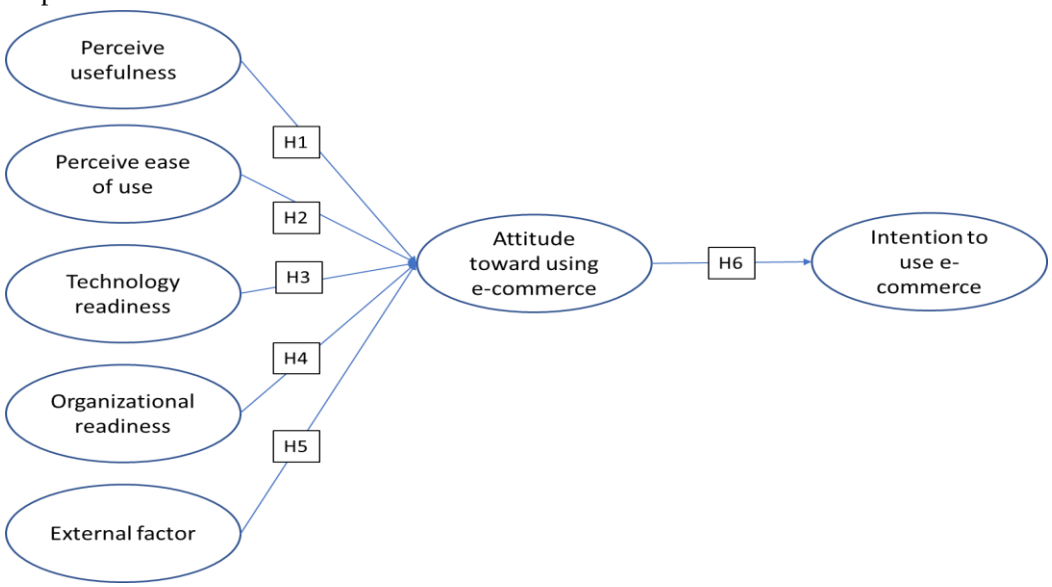

Fig 1. Research model of e-commerce adoption by SMEs

Table 1. List Of Proposed Hypotheses In The Research Model

Variable and abbreviation	Hypotheses
Perceive usefulness (PU) → Attitude toward using e-commerce (ATU)	H1: perceive usefulness positively influences attitude toward using e-commerce
Perceive ease of use (PEU) → Attitude toward using e-commerce (ATU)	H2: perceive ease of use positively influences attitude toward using e-commerce
Technology readiness (TER) → Attitude toward using e-commerce (ATU)	H3: Technology readiness positively influences attitude toward using e-commerce

Organizational readiness (OR) → Attitude toward using e-commerce (ATU)	H4: Organizational readiness positively influences attitude toward using e-commerce
External factor (EF) → Attitude toward using e-commerce (ATU)	H5: External factor positively influences attitude toward using e-commerce
Attitude toward using e-commerce (ATU) → Intention to use e-commerce (ITU)	H6: Attitude toward using e-commerce positively influences Intention to use e-commerce

The research employed a nonprobability sampling method, specifically using the purposive sampling technique. The survey was disseminated through the utilization of Google Form. The target audience for this research consists of Small and Medium Enterprises (SMEs) that have been operating for a minimum of one year. These SMEs are located in Bogor Regency and are engaged in industries such as culinary, textiles and fashion, handmade, accessories and merchandising, health supplements, gadgets, digital asset services, stationery, automotive, and other related sectors. By employing the Slovin equation, a sample size of 204 samples was acquired. Upon reviewing the received questionnaires, a total of 170 samples were identified for further investigation. Data processing involves the utilization of descriptive analysis and Structural Equation Modeling (SEM) Partial Least Squares (PLS) techniques, facilitated by spreadsheet programs and SmartPLS software. Descriptive statistical analysis is used to make inferences about the target population being studied. The Partial Least Square (PLS) Structural Equation Modeling (SEM) analysis employs the PLS equation technique, comprising of two components: the inner model, also known as the structural model, and the outer model, also known as the measurement model. The inner model illustrates the correlation between variables, whereas the outer model elucidates the connection between latent variables and indicator variables [26]. The utilization of the Partial Least Squares (PLS) technique is motivated by two primary factors. Firstly, structural equation modeling allows for the simultaneous analysis of multiple equations, in contrast to simple regression. Secondly, PLS is a robust analytical method that does not rely on numerous assumptions and does not require the data to follow a normal distribution [26].

III. RESULT AND DISCUSSION

A. Responden and Business Profile

Tabel 1. Profil UKM

Age of respondent	
a. 20 - 30 years	19
b. 31 - 40 years	46
c. 41 - 50 years	67
d. More than 50 years	38
Gender	
a. Male	59
b. Female	111
Line of business	
a. Culinary	114
b. Textiles and fashion	20
c. Handcraft, accessories and merchandise	15
d. Health supplements	7
e. Gadgets for sale	6
f. Digital asset services	2
g. Stationery	1
h. Automotive	1
i. Others	1
Respondent's position	
a. Owner	158
b. Manager	5
c. c. Employee	7
Income	
a. < 10 million/month	127
b. 10 - 20 million/month	28
c. 21 - 30 million/month	8
d. d. > 30 million/month	7

Education	
a. Elementary School	4
b. Junior High School	8
c. High School	67
d. Diploma/graduate	91
Age of business	
a. < 3 years	56
b. 3 - 5 years	65
c. 5 - 10 years	30
d. d. > 10 years	19
Number of employees	
a. < 5 people	149
b. 5 - 19 people	19
c. c. 20 - 99 people	2
e-commerce used *(respondents can choose more than 1)*	
a. Blibli	6
b. Bukalapak	8
c. PadiUMKM	10
d. Lazada	11
e. Tokopedia	32
f. Shopee	39
g. Facebook	79
h. Instagram	80
i. Whatsapp	144

Out of all the SMEs surveyed, 38.2% have been operating for a period of 3-5 years, 17.6% for 5-10 years, and 11.2% for more than 10 years. According to this data, they possess expertise in managing a business and the business is currently active. Moreover, a significant proportion of respondents (87.6%) reported having fewer than 5 employees, while the majority of respondents (74.7%) indicated a monthly revenue of less than 10 million. Regarding the data pertaining to e-commerce applications utilized by respondents, it is evident that Whatsapp, Facebook, and Instagram have a prominent position as the preferred platforms employed by small and medium-sized enterprises (SMEs) for marketing and selling their items. In addition, the surveyed small and medium enterprises (SMEs) have utilized various online marketplaces, including Tokopedia, Shopee, Lazada, PadiUMKM, and Blibli. The findings suggest that small and medium-sized enterprises (SMEs) in Bogor Regency are familiar with digital marketing tools for marketing their products..

B. Outer Model Testing

Table 2. Model Measurement Results

Variabel	Outer Loading	AVE	CR	Croncbach's Alpha
Attitude toward using e-commerce (ATU)		0,854	0,946	0,914
ATU1= I am happy that using e-commerce can increase my SME's revenue	0,885			
ATU2= I believe using e-commerce will increase the excellence of my SMEs	0,927			
ATU3= I believe e-commerce is very useful in supporting my SME business	0,917			
External factor (EF)		0,718	0,927	0,902
EF1= There are pushes and demands from consumers that motivate my SME to adopt e-commerce	0,860			
EF2= The encouragement and demands of suppliers to use e-commerce	0,850			
EF3= The encouragement and demands of the development of the business world that is developing online encourage my SME to adopt e-commerce	0,875			
EF4= The existence of government encouragement for SMEs to go online in marketing and selling their products	0,850			
EF5= The existence of encouragement and demands from competitors engaged in similar businesses that use e-	0,800			

Variabel	Outer Loading	AVE	CR	Croncbach's Alpha
commerce				
Intention to use e-commerce (ITU)		0,833	0,952	0,933
ITU1= I am very interested in using e-commerce in business	0,930			
ITU2= I intend to use e-commerce in my business	0,942			
ITU3= I will recommend and invite my friends to use e-commerce	0,890			
ITU4= I see the benefits when using e-commerce and it makes me interested in using e-commerce	0,886			
Organizational readiness (OR)		0.698	0.920	0.892
OR1= Our SME has sufficient capital for e-commerce adoption	0,779			
OR2= Our SME is ready to accept the risks of utilizing e-commerce	0,835			
OR3= The leadership of our SME is ready to commit to implementing e-commerce in product sales	0,886			
OR4= Our SME accepts changes and developments in information technology in the use of e-commerce	0,851			
OR5= Our SME has employees who are ready and adaptable in the use of e-commerce	0,823			
Technology readiness (TER)		0.729	0.931	0.907
TER1= The e-commerce technology needs match the needs of our SMEs	0,821			
TER2= Our SMEs' human resources have the knowledge and skills to use e-commerce	0,823			
TER3= Our SMEs have devices/gadgets (cell phone/tablet/laptop) and internet network (Wifi/data package) to manage e-commerce	0,865			
TER4= The benefits we get are in accordance with the costs I incur in using e-commerce	0,881			
TER6= E-commerce adoption is an important innovation by our SMEs in the use of information technology in business	0,872			
Perceive usefulness (PU		0.713	0.937	0.919
PU1= Using e-commerce can increase the number of buying and selling transactions	0,822			
PU2= Using e-commerce helps my SME products become easier for consumers to find and buy	0,892			
PU3= Using e-commerce can help consumers who are far from the location of SMEs can see and buy my SME products	0,827			
PU4= Using e-commerce increases the network of business partners (resellers, dropshippers)	0,837			
PU5= Using e-commerce reduces the cost of advertising/promoting my shop/products	0,818			
PU6= Using e-commerce helps extend service time to consumers and saves sales human resources	0,866			
Perceive ease of use (PEU)		0.798	0.940	0.915
PEU1= It is not difficult to learn how to use e-commerce applications.	0,898			
PEU2= I had no difficulty in registering and activating my SME e-commerce account.	0,923			
PEU3= Downloading and installing e-commerce applications is quick and easy to do.	0,884			
PEU4= Using e-commerce applications is not difficult for my SME.	0,867			

During the evaluation of the outer model, convergent validity is assessed by comparing it to a validity standard of 0.7 [26]. This evaluation involves examining 32 indicators that can be further investigated. Table 2 displays the indicators that have satisfied the criteria for convergent validity, as determined by their outer loading values. Reliability testing employs Composite Reliability (CR), Average

Variance Extracted (AVE), and Cronbach's Alpha [26]. The test findings indicate that the Average Variance Extracted (AVE) falls within the range of 0.713 to 0.854, which above the threshold of 0.5. This demonstrates that all variables satisfy the criteria for convergent validity. Furthermore, the Cronbach's Alpha and Composite Reliability values are greater than 0.7 so that it can be interpreted that all variables have high reliability.

C. Inner Model Testing

The modified Technology Acceptance Model (TAM) and Technology Organization Environment (TOE) Model can be used to forecast the elements that influence e-commerce adoption among SMEs in Bogor Regency. Table 3 presents the correlation between variables. The variable "External Factors on Adoption Attitude" exhibits a positive and statistically significant association value (β=0.374, T-statistic>1.96, $p<0.05$), confirming the acceptance of the hypothesis. This suggests that any augmentation in the value of the external factor variable will result in a corresponding rise in the inclination towards embracing e-commerce by small and medium-sized enterprises (SMEs). The aforementioned finding is consistent with the studies conducted by [14], [27], [28], [29]. Meeting customer requests, such as facilitating convenient transactions through e-commerce, can also contribute to the development of small and medium-sized enterprises (SMEs) [29]. Government support, such as providing financial access assistance, plays a crucial role in the growth of small and medium-sized enterprises (SMEs) in Europe, as stated by [36]. According to [37], the government needs to take more decisive action in addressing the challenges that small and medium-sized enterprises (SMEs) encounter when trying to obtain financial support. This can be achieved by initiatives such as providing capital injections in guaranteed loan programs, direct lending programs, microcredit loans, and other forms of financial guarantees.

The government can further stimulate the expansion of innovation by small and medium-sized enterprises (SMEs) [38], [39], [40], [41]. The link between the variables of Attitude towards utilizing e-commerce and Intention to use e-commerce is positive and significant. This is indicated by a beta coefficient of 0.705, a t-statistic greater than 1.96, and a p-value less than 0.05. Therefore, the hypothesis is accepted. This finding is consistent with the studies conducted by [16], [24], [30]. The link between the perceived usefulness variable and attitude towards adopting e-commerce is positive and significant, as indicated by a beta coefficient of 0.202, a t-statistic greater than 1.96, and a p-value less than 0.05. Therefore, the hypothesis is accepted. Consequently, if the perceived usefulness of e-commerce rises, there will be a corresponding increase in the inclination to use e-commerce. This finding aligns with the research conducted by [6], [8], [14], [15], [16], [24], [31]. However, it differs from studies conducted on Thai SMEs, where perceived usefulness was not found to be a significant factor [32]. The study examined the impact of the Organizational Readiness variable on Attitude towards using e-commerce among Small and Medium Enterprises (SMEs) in Bogor Regency.

The results indicate a positive relationship between Organizational Readiness and Attitude towards e-commerce adoption. However, this relationship was found to be statistically insignificant. The outcome aligns with the conclusions drawn by [34], but diverges from the findings of [33]. [33] emphasizes that organizational readiness is closely associated with technology readiness, highlighting the significance of factors such as SME owner's readiness, level of innovation, experience, and IT insight in influencing e-commerce adoption. The analysis of the relationship between the Technology Readiness variable and Attitude towards utilizing e-commerce indicates a positive correlation, however, this correlation is not statistically significant in terms of its impact on e-commerce adoption. This conclusion contradicts the results of [24], [25], [34], who discovered a favorable and substantial impact of technical readiness on e-commerce adoption. The findings from Table 3 indicate that the impact of the perceived ease of use factor on Attitude towards utilizing e-commerce is not statistically significant, as reported by [24]. However, this is in contrast to the findings of [16] and [14].

Table 3. Hypothesis Testing Results

Variabel	β	T Statistics (> 1,96)	P Values (< 0,05)	Hasil
Attitude toward using e-commerce (ATU) → Intention to use e-commerce (ITU)	0,705	10,325	0,000	Positive Significant Accepted
External factor (EF) → Attitude toward using e-commerce (ATU)	0,374	4,630	0,000	Positive Significant Accepted
Organizational readiness (OR) → Attitude toward using e-commerce (ATU)	0,100	0,981	0,327	Positive Not significant Rejected
Technology readiness (TER) → Attitude toward using e-commerce (ATU)	0,186	1,615	0,107	Positive Not significant Rejected
Perceive usefulness (PU) → Attitude toward using e-commerce (ATU)	0,202	2,495	0,013	Positive Significant Accepted
Perceive ease of use (PEU) → Attitude toward using e-commerce (ATU)	0,063	0,662	0,508	Positive Not significant Rejected

IV. CONCLUSION

Perceived usefulness, External factors, and Attitude towards using e-commerce are driving factors that increase the adoption of e-commerce by SMEs in Bogor Regency. The belief that e-commerce can help SME products more easily searched and purchased by consumers without the limitation of region and time, the encouragement of consumers who want to make purchases online, the demand of suppliers and the presence of competitors from similar businesses that have done online marketing, the presence of government support in financial aspects and efforts to increase SME innovation and the presence of optimistic feelings that e-commerce can increase sales are important for SMEs in Bogor Regency to adopt and optimize e-commerce. These can be considered in developing strategies and policies for local government and other related parties to increase e-commerce adoption and further research on the impact of knowledge and use of digital marketing by Bogor Regency SMEs on innovation and sustainable performance as well as studying market penetration models for Bogor Regency SME products.

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